

In the Claims:

Claim 1 was examined.

Claim 1 has been cancelled.

New claims 2- 7 have been added.

1. (cancelled)

2. (new) A loudspeaker comprising:

a frame having an interior bottom surface with a side portion extending upward from, and surrounding, said interior bottom surface, said side portion terminating in an exterior edge of a uniform first height above said interior bottom surface with said exterior edge defining an opening into the frame having a first predetermined size and shape;

an audio motor including a magnet assembly having an air gap mounted to the bottom surface of the frame and a thin walled bobbin having an outer surface of a first diameter with a first end with a voice coil wound thereon and located in said air gap, and a second end extending out of said air gap;

a cone having an outer edge and an inner edge, and a top surface and a bottom surface with said outer edge being substantially the same shape as, and a second size that is smaller than said first size defined by the exterior edge of the frame, with said inner edge defined by a centrally located circular hole of a second diameter through the cone, said second diameter having a third size that is smaller than said second; the cone from the inner edge radiates outward and upward at a first selected angle to a flat plateau, from said plateau downward into a deep groove with an outer side of said groove extending outward and upward to said outer edge; wherein the outer most end of said plateau defines a circle of a third diameter that is larger than an outer most extent of said audio motor relative to said interior bottom surface of said frame with a bottom most point of said groove defining a circle of a fourth diameter that is larger than said third diameter;

a ring shaped sleeve having a bottom edge and a top edge attached to the outer surface of said bobbin with said top edge spaced apart from said second end of the bobbin, wherein said sleeve defines an inner shoulder of a selected width a selected distance from said top edge creating a circular outward extending ring at the top edge of the sleeve, said outward extending ring having an inner diameter that is greater than said first diameter with the balance of the sleeve having an inner diameter that is substantially the same as said first diameter to provide a snug fit with the outer surface of the bobbin, wherein said inner edge of said cone is affixed between the outer surface of the bobbin and an inner side of outward extending ring in contact with said shoulder of the sleeve;

a first flexible suspension connected between the exterior edge of the frame and the outer edge of the cone; and

a stiff diaphragm having an outer edge, a top surface and a bottom surface; said stiff diaphragm having a fifth diameter that is equal to, or somewhat greater than said third diameter, the bottom surface of an outer portion of said diaphragm is affixed to said plateau of the cone, and the bottom surface of a center portion of said diaphragm is affixed to said second end of the bobbin;

wherein an inner most portion of said cone, a portion of said bottom surface of said diaphragm and a portion of said outer surface of said bobbin nearest said second end define an enclosed substantially triangular area that encircles a center portion of said loudspeaker; and

wherein when audio motor is energized and said voice coil drawn inward the groove portion of said cone moves inward toward said bottom of said frame and clears the outer most extend of said audio motor.

3. (new) A loudspeaker as in claim 2:

wherein said frame defines an interior mounting surface therearound spaced apart from said exterior edge and adjacent a bottom portion of said deep groove when said audio motor is unenergized; and

further comprising a second flexible suspension having an outer edge and an inner edge with the outer edge affixed to said interior mounting surface therearound and said inner edge affixed to said bottom portion of said deep groove.

4. (new) A loudspeaker as in claim 2 wherein said diaphragm includes a centrally defined circularly shape connection shoulder having a sixth diameter that is substantially equal to said first diameter, said connection shoulder affixed to said second end of said bobbin.

5. (new) A loudspeaker as in claim 2 wherein vent holes are defined by, through, and spaced around each of said bobbin near said second end and a portion of said cone nearest said bobbin to facilitate cooling of the loudspeaker.

6. (new) A loudspeaker as in claim 2 wherein said inner edge of said cone is bifurcated forming two spaced apart tines, one of said tines affixed between the outer surface of the bobbin and an inner side of outward extending ring in contact with said shoulder of the sleeve and the other of said tines affixed to an outer surface of said outward extending ring of said sleeve.

7. (new) A loudspeaker comprising:
a frame having a vertical walled ring forming a center hole of a first diameter with a top edge of said ring attached to an inner side of an upward opening arcuate bottom portion in the shape of a half-doughnut with an outer edge of said arcuate bottom portion coupled to an outward extending inner ledge with an outer end of said ledge coupled to upward extending portion and then extending outward forming a mouth portion having a first size and shape; wherein an inner surface of said ring is substantially parallel to a center axis of said frame, and a highest point closest to the center of the frame being substantially the same height above a bottom most point of said arcuate portion as the inner ledge;

an audio motor including a magnet assembly having an air gap mounted within said ring of the frame and a thin walled bobbin having an outer surface of a second diameter with a first end with a voice coil wound thereon and located in said air gap, and a second end extending out of said air gap with said first diameter being larger than said second diameter;

a cone having an outer edge and an inner edge, said cone having a top surface and a bottom surface with said outer edge being substantially the same shape as, and a second size that is smaller than said first size defined by the mouth of the frame, with said inner edge defined by centrally located circular hole of a third diameter through the cone with said third diameter being substantially equal to said second diameter; wherein the cone extends downward from the outer edge to a point that substantially aligned with the bottom point of said arcuate portion of the frame and the extending upward to a downward curling lip to the inner edge of the cone; the inner edge of said cone being attached to said second end of the bobbin;

a first flexible suspension connected between the exterior edge of the frame and the outer edge of the cone; and

a second flexible suspension connected between said inner ledge and said top edge of said ring of the frame with the bottom most point of the bottom surface of said cone affixed to substantially a center point of said second flexible suspension.